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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TABATABAI, ABOLFAZL

ART UNIT PAPER NUMBER

2621

DATE MAILED: 02/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/254,959

Applicant(s)

CHEN ET AL.

Examiner

ABOLFAZL TABATABAI

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 9-12, 14-17, 20-23, 28, 29, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (5,821,552) in view of Barrett(3,961,188).

Regarding claim 1, Ishikawa et al disclose an imaging system (46) shown in Fig. 3, which defines an optical path therein, for capturing an image from the image-bearing (38), the imaging system comprising:

a solid radiation bearing detector (40) disposed in the optical path and adapted to convert the image bearing radiation (38) into converted radiation (Column 6, lines 18-25)

However, Ishikawa et al do not teach: A photocathode (42, 102), shown in Figs. 3 and 8 respectively, disposed within the camera housing (94) along the optical path to convert the conveyed radiation into a stream of electrons (116) representative of the image-bearing radiation (38),

an image amplifier (112, 114) disposed in the stream of electrons (116) such that image amplifier (112, 114) electrostatically accelerates the stream

Art Unit: 2621

of electrons (116), and

an amplified detector (96) disposed after the image amplifier (112, 114) and, upon input of the stream of electrons (116), being adapted to generate secondary electrons to further amplify the image represented thereby such that the amplified detector (96) then converts secondary electron into an electronic signal representative of the image.

On the other hand Barrett teaches: A photocathode (42, 102)(Fig. 1 element 44 and Fig. 6 element 120 of Barrett) shown in Figs. 3 and 8 respectively, disposed within the camera housing (94)(Column 10, lines 26-33 of Barrett) along the optical path to convert the conveyed radiation into a stream of electrons (116)(Column 10, lines 25-34 of Barrett) representative of the image-bearing radiation (38)(Column 4, lines 40-47 of Barrett),

an image amplifier (112, 114)(Fig. 7 element 152) disposed in the stream of electrons (116)(Column 5, lines 36-43 of Barrett) such that image amplifier (112, 114)(Fig. 7 element 152) electrostatically accelerates the stream of electrons (116)(Fig. 6 and column 3, lines 41-51) and

an amplified detector (96)(Fig. 6 element 130 of Barrett) disposed after the image amplifier (112, 114)(Fig. 7 element 152 of Barrett) and, upon input of the stream of electrons (116)(Column 10, lines 47-60 of Barrett) being adapted to generate secondary electrons to further amplify the image represented thereby such that the amplified detector (96) then converts secondary electron into an electronic signal representative of the image(Column 5, lines 18-25 and 34-37 of

Barrett).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ishikawa et al's invention according to the teachings of Barrett, because they are from the similar radiation image system area(See abstract of Barrett)

Regarding claim 2, a radiation imaging system (30), shown in Fig. 3, comprising

a radiation source (32)(Column 5, lines 13-25 of Barrett)that projects radiation (35)(Column 13, lines 34-37 of Barrett)toward an object (36), thereby creating image-bearing radiation (38) from the object (35)(Column 2, lines 43-60)toward the imaging system (46)(Column 2, lines 43-60) and

an imaging system (46)(Column 2, lines 43-60 of Barrett)which according to claim 1 has a solid radiation bearing detector (40), shown in Fig. 4, comprising

a scintillator (50)(Column 5, lines 21-25 of Barrett) which converts the image bearing- radiation (38)(Column 4, lines 40-47 of Barrett)into a visible light spectrum(116) (Column 14, lines 24-34 of Barrett).

Regarding claim 3, arguments analogous to those presented above for claim 1, are applicable to claim 3.

Regarding claim 4, the imaging, system (80) according to claim 3 wherein the photocathode (102)(Fig. 6 element 120 of Barrett) is fabricated of gallium-arsenide, which converts the infrared radiation bearing light(110)(Column 14, lines 29-34 of Barrett)reflected from object (84) and transmitted through fiber

optic light guide system (92, 82 and 88)(Fig. 1 element 38 of Barrett)into streams of electrons (116)(Column 5, lines 36-43 of Barrett) which are gated according to their arrival time at the high voltage electrodes (112)(Fig. 7 element 152 of Barrett) lines 36-43 of Barrett)to analyze the time dependent images at detector (96)(Fig. 6 element 130 of Barrett)after an initial flash from the light source (90) (Column 6, lines 6-8 of Barrett)has been emitted and reflected.

Regarding claim 9, arguments analogous to those presented above for claim 2, are applicable to claim 9.

Regarding claim 10, the radiation imaging system (30) according to claim 9 wherein the radiation source (621 electronically shifts between two dynamically selectable positions(66, 68) to generate stereo pairs of three-dimensional images and to select the line-of-view of an object of interest bypass other shadowing objects(Column 2, lines 10-22 of Barrett).

Regarding claim 11, arguments analogous to those presented above for claim 10, are applicable to claim 11.

Regarding claim 12, the radiation imaging system (30) according to claim 9 wherein the radiation source projects divergent rays of the radiation and has a spot size smaller than a resolution of the radiation imaging system (30)(Column 11, lines 32-40 of Barrett).

Regarding claim 14, arguments analogous to those presented above for claim 1, are applicable to claim 14.

Regarding claim 15, arguments analogous to those presented above for

claim 2, are applicable to claim 15.

Regarding claim 16, arguments analogous to those presented above for claim 3, are applicable to claim 16.

Regarding claim 17, arguments analogous to those presented above for claim 15, are applicable to claim 17.

Regarding claim 20, arguments analogous to those presented above for claim 9, are applicable to claim 20.

Regarding claim 21, arguments analogous to those presented above for claim 10, are applicable to claim 21.

Regarding claim 22, arguments analogous to those presented above for claim 11, are applicable to claim 22.

Regarding claim 23, arguments analogous to those presented above for claim 12, are applicable to claim 23.

Regarding claim 28 arguments analogous to those presented above for claim 9, are applicable to claim 28.

Regarding claim 29, arguments analogous to those presented above for claim 1, are applicable to claim 29.

Regarding claim 31, arguments analogous to those presented above for claim 1, are applicable to claim 31.

Regarding claim 32, arguments analogous to those presented above for claim 4 , are applicable to claim 32.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-8, 13, 18, 19, 24-27, and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (5,821,552) and Barrett(3,961,188) in view of Deckman et al(4,891,829).

Regarding claim 5, neither Ishikawa et al nor Barrett disclose the imaging system (80) according to claim 3 wherein the image amplifier(112, 114) is adapted to selectively electronically magnify the image-bearing radiation (110) as measured at detector (96) and thus adjust a resolution of the image.

On the other hand Deckman et al teach: The imaging system (80) according to claim 3 wherein the image amplifier(112, 114) is adapted to selectively electronically magnify the image-bearing radiation (110)(Column 4, lines 1-17 of Deckman et al) as measured at detector (96)(Column 14, lines 37-44 and column 16, lines 1-2 of Deckman et al) and thus adjust a resolution of the image(Column 16, lines 16-32 of Deckman et al).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ishikawa et al's invention according to the teachings of Deckman et al et al, because they are from the similar radiation

image system area(See abstract of Deckman et al).

Regarding claim 6, the imaging system (80) according claim 5 wherein the image amplifier (112,114)(Fig. 7 element 152 of Barrett) is dynamically selectable to adjust magnification so as to govern an area of an object(84)to be imaged (Column 4, lines 5-17 of Deckman et al).

Regarding claims 7, and 8, arguments analogous to those presented above for claim 1, are applicable to claims 7, and 8.

Regarding claim 13, the imaging system (46) according to claim 1 further comprising:

filtering means for filtering the image-bearing radiation (38) consecutively through a plurality of filters (40) thus creating a plurality of subimages(Column 9, lines 12-17 of Deckman et al),

analysis means to distinguish between the changes of sub-images due to the filtering of the radiation and due to the object motion during and between the exposures(Column 8, lines 7-37 of Deckman et al)and

filtering means for filtering the image-bearing radiation consecutively through a plurality of wavelength filters (40) which allows only light within a preselected ranges of wavelength to pass, So that a " colored " image can be formed using these subimages of different wavelength(Column 16, lines 16-32 of Deckman et al)

analysis means to distinguish between the changes of sub-images due to the filtering of the light of different wavelength and due to the object motion

during and between the exposures(Column 16, lines 16-32 of Deckman et al)

and

correlating means for correlating the changes of the plurality of the sub-images due to the object motion and correlating the plurality of sub-images into a color image (Fig. 10)(Column 18, lines 11-45 and column 23, lines 11-20 of Deckman et al).

Regarding claim 18, arguments analogous to those presented above for claim 7, are applicable to claim 18.

Regarding claim 19, arguments analogous to those presented above for claim 8, are applicable to claim 19.

Regarding claim 24, arguments analogous to those presented above for claim 13, are applicable to claim 24.

Regarding claim 25, the radiation imaging system according to claim wherein the imaging system corrects for motion in a color image generated by capturing two or more consecutive sub-images, the imaging system further comprising, calculation means for calculating the shift vector between the two or more consecutive sub-images, using lists of characteristic quantities computed from the images; mapping means for mapping a coordinate transformation of a first image into a second image of the two or more consecutive sub-images(Column 7, lines 24-27 of Deckman et al) computing means for computing corresponding transformations of the two or more consecutive sub-images by interpolation(Column 7, lines 44-54 of Dckman et al) and reconstruction means for reconstructing the image from the two or more consecutive

sub-images(Column 3, lines 29-31 and column 8, lines 31-33 of Dcekman et al).

Regarding claim 26, the radiation imaging system according to claim YCI further comprising processing means for differentiating between foreground and non-uniform background in the plurality of radiation shadows such that the non-uniform background can be subtracted from the image(Column 18, lines 11-19, and 37-45 of Deckman et al).

Regarding claim 27, arguments analogous to those presented above for claim 26, are applicable to claim 27.

Regarding claim 33, arguments analogous to those presented above for Claim 5, are applicable to claim 33.

Regarding claim 34, arguments analogous to those presented above for claim 6, are applicable to claim 34.

Regarding claim 35, arguments analogous to those presented above for claim 13, are applicable to claim 35.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 30, is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (5,821,552) and Barrett(3,961,188) in view of Anderson et al(5,319,203).

Regarding claim 30, neither Ishikawa et al nor Barrett disclose the radiation imaging system according to claim wherein the scintillator has a density of at least 7.5 grams per cubic centimeter.

On the other hand Anderson et al teach: The scintillator has a density of at least 7.5 grams per cubic centimeter(Column 3, lines 47-55 of Anderson et al).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Ishikawa et al's invention according to the teachings of Anderson et al, because they the 7.13 grams per cubic centimeter and 7.5 grams per cubic centimeter are in the same scientific range.

Other prior arts

7. U. S. Patent (4,193,089) to Brougham et al is cited for television radiation imaging system and method.

U. S. Patent (4,995,396) to Inaba et al is cited for radioactivity ray detecting endoscope.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

Art Unit: 2621

Any response to this action should be mailed to:

Assistant Commissioner for Patents

Washington, D.C. 20231

Or faxed to:

(703) 308-9051, or (703) 308-9052 (for **formal** communications; please mark

"EXPEDITED PROCEDURE")

Or:

(703) 306-5406 (for **informal** or **draft** communications, please label "PROPOSED" or "DRAFT")

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

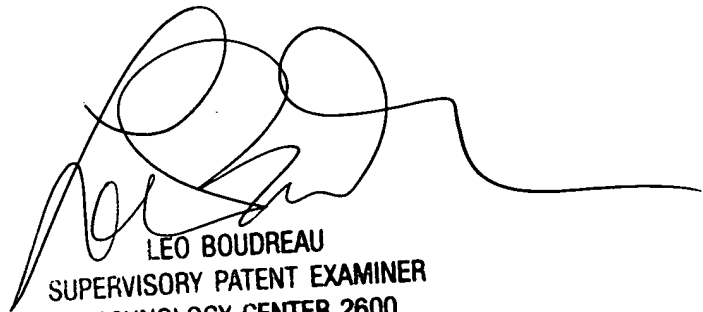
Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 305-4750

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2621

February 21, 2002



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